

Leaning Juniper II Wind Project: Revegetation Plan

[NOVEMBER 20, 2009]

I. Introduction

This plan describes methods and standards for restoration of areas disturbed during the construction of the Leaning Juniper II Wind Power Facility (LJF), excluding areas occupied by permanent facility components (the “footprint”).¹ The objective of revegetation is to restore the disturbed areas to pre-disturbance condition or better. The site certificate for the facility requires restoration of these areas. This plan has been developed in consultation with the Oregon Department of Fish and Wildlife (ODFW).

The site certificate describes the area of disturbance anticipated during construction of the LJF. The affected area includes cultivated or otherwise developed agricultural land (cropland) as well as areas of grassland, shrub-steppe habitat and other habitat subtypes (wildlife habitat areas). The intensity of the construction impact will vary. In some areas, the impact will be relatively light, but in other areas, heavy construction activity will remove all vegetation, remove topsoil and compact the remaining subsoil. Where vegetation has been damaged or removed during construction, the certificate holder must restore suitable vegetation. In addition, the certificate holder shall maintain erosion and sediment control measures put in place during construction until the affected areas are restored as described in this plan and the risk of erosion has been eliminated. The plan specifies monitoring procedures to evaluate revegetation success of disturbed wildlife habitat areas. Remedial action may be necessary for wildlife habitat areas that do not show revegetation progress. Additional mitigation may be necessary if revegetation is unsuccessful.

II. Description of the Facility Site

The facility is located in Gilliam County, Oregon. The facility site is on private agricultural land used primarily for livestock grazing and some dry land winter wheat production. Soils are typically loess formations of well-drained, moderately permeable, fertile silt loams over basalt. The area receives approximately 9 inches of precipitation annually, most of which occurs between October 1 and March 31.

The site is within the Columbia Plateau physiographic province. The facility is located on an upland plateau at elevations ranging up to 980 feet, with relief of about 130 feet. Most of the native vegetation within the site boundary has been modified by livestock grazing and past wildfires. Functional mature shrub-steppe and juniper woodland habitat is patchy, occurring in specific locations. Bitterbrush shrub cover is located in the north area west of Highway 19 and shrub-grass sagebrush in residual patches throughout with larger patches just west of Highway 19 and in lower elevation, deeper soil areas of the LJIB area.² Mature juniper tree woodlands with grassland or shrub-grass/sagebrush understories are mostly within a swath just west of Highway 19 and at lower elevations of the eastern portions east of Highway 19 in the LJIB area. Individual junipers are sparsely scattered in other habitats. Category 2 and 3 open low shrub

¹ This plan is incorporated by reference in the site certificate for the Leaning Juniper II Wind Power Facility and must be understood in that context. It is not a “stand-alone” document. This plan does not contain all mitigation required of the certificate holder.

² The LJIA and LJIB areas are described in the *Final Order on Amendment #1*.

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1 habitat is the most abundant native habitat. It consists of low-stature snakeweed and rabbitbrush-
2 dominated shrub lands with patches of sagebrush and native bunchgrass, each with varying
3 degrees of non-native invasive grass and forb species. Perennial grassland is in patches where
4 grazing and other activities have had less intensive land use impacts.

5 **III. Revegetation Methods**

6 The certificate holder shall begin restoration of disturbed areas as soon as possible after
7 completion of facility construction activity in the area to be restored. The certificate holder shall
8 restore areas of disturbance by preparing the soil and seeding using common application
9 methods. The certificate holder shall use mulching and other appropriate practices to control
10 erosion and sediment during facility construction and during revegetation work. The certificate
11 holder shall restore topsoil to pre-construction condition. The certificate holder shall select the
12 seed mix to apply based on the pre-construction land use, as described below. For affected
13 juniper woodland areas, planting young juniper trees may be preferred over seeds. The certificate
14 holder shall consult with ODFW as described in Section V below regarding appropriate seeding
15 or planting according to site-specific restoration needs.

16 **1. Seed Planting Methods**

17 Planting should be done at the appropriate time of year to facilitate seed germination,
18 based on weather conditions and the time of year when construction-related ground disturbance
19 occurs. The certificate holder shall choose planting methods based on site-specific factors such
20 as slope, erosion potential and the size of the area in need of revegetation. Disturbed ground may
21 require chemical or mechanical weed control before weeds have a chance to go to seed. Two
22 common application methods are described as follows.

23 (a) Broadcasting

24 Broadcast the seed mix at the specified application rate. Where feasible, apply half of the
25 total mix in one direction and the second half of mix in the direction perpendicular to first half.
26 Apply weed-free straw from a certified field or sterile straw at a rate of two tons per acre
27 immediately after applying seed. Crimp straw into the ground to a depth of two inches using a
28 crimping disc or similar device. As an alternative to crimping, a tackifier may be applied using
29 hydroseed equipment at a rate of 100 pounds per acre. Prior to mixing the tackifier, visually
30 inspect the tank for cleanliness. If remnants from previous hydroseed applications exist, wash
31 tank to remove remnants. Include a tracking dye with the tackifier to aid uniform application.
32 Broadcasting should not be used if winds exceed five miles per hour.

33 (b) Drilling

34 Using an agricultural or range seed drill, drill seed at 70 percent of the recommended
35 application rate to a depth of ¼ inch or as recommended by the seed supplier. Where feasible,
36 apply half of the total mix in one direction and the second half of mix in the direction
37 perpendicular to first half. If mulch has been previously applied, seed may be drilled through the
38 mulch provided the drill is capable of penetrating the straw resulting in seed-to-soil contact
39 conducive for germination.

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1 **IV. Restoration of Cropland**

2 The certificate holder shall seed disturbed cropland areas with wheat or other crop seed.
3 The certificate holder shall consult with the landowner and farm operator to determine species
4 composition, seed and fertilizer application rates and application methods.

5 Cropland areas are successfully revegetated when the replanted areas achieve crop
6 production comparable to adjacent non-disturbed cultivated areas. The certificate holder shall
7 consult with the landowner or farmer to determine whether these areas have been successfully
8 revegetated and shall report to the Department on the success of revegetation in these areas.

9 **V. Restoration of Wildlife Habitat Areas**

10 The certificate holder shall seed all disturbed grassland, shrub-steppe, juniper woodland
11 and other wildlife habitat subtype areas that are not cropland. The certificate holder shall consult
12 with ODFW and the landowner to determine the appropriate seed mix and application rate for
13 these areas, including a combination of grasses, forbs, shrubs and juniper trees based on the
14 characteristics of the affected area. The mix should contain native species selected based on
15 relative availability and compatibility with local growing conditions. Seed mix selection should
16 consider soil erosion potential, soil type, seed availability and the need for using native or native-
17 like species. The certificate holder shall obtain approval of the composition of the seed mix from
18 the Oregon Department of Energy (Department). The certificate holder shall use seed provided
19 by a reputable supplier and complying with the Oregon Seed Law. The certificate holder shall
20 determine the number and size of the juniper tree plants based on the professional judgment of a
21 qualified biologist after a ground survey of actual conditions. The certificate holder shall obtain
22 trees from a qualified nursery or suitable transplants from LJIB construction zones.

23 **VI. Monitoring**

24 **1. Revegetation Record**

25 The certificate holder shall maintain a record of revegetation work for both cropland and
26 wildlife habitat areas. In the record, the certificate holder shall include the date that construction
27 activity was completed in the area to be restored, a description of the affected area (location,
28 acres affected and pre-disturbance condition), the date that revegetation work began and a
29 description of the work done within the affected area. The certificate shall update the
30 revegetation records from time to time, as revegetation work occurs. The certificate holder shall
31 provide copies of these records to the Department at the time of submitting the annual report
32 required under the site certificate.

33 **2. Monitoring Procedures**

34 The certificate holder shall monitor the revegetation of wildlife habitat areas as described
35 in this section, unless the landowner has converted the area to a use inconsistent with the success
36 criteria. The certificate holder shall employ a qualified investigator (an independent botanist or
37 revegetation specialist) to examine all non-cropland revegetation areas to assess vegetation cover
38 (species, structural stage, etc.) and progress toward meeting the success criteria described below.

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Weed Control

A qualified investigator shall inspect each revegetation area on an annual basis during the first five years following initial seeding to assess weed growth and to recommend weed control measures. The investigator shall report to the certificate holder, the Department and ODFW following each inspection, describing weed growth and the success of control measures. Based on the Year 5 report (described below), the certificate holder shall confer with the Department and ODFW to develop a weed control plan for subsequent years.

Wildlife Habitat Recovery

After the first growing season following initial seeding (Year 1), a qualified investigator shall inspect each revegetation area to assess revegetation success based on the success criteria and to recommend remedial actions, if needed. The qualified investigator shall reinspect these areas at two years and at four years after the first inspection (Year 3 and Year 5). The investigator shall report to the certificate holder, the Department and ODFW following each inspection. The report shall include the investigator's assessment of whether the revegetated areas are trending toward meeting the success criteria and any remedial actions recommended.

Based on the Year 5 report, the certificate holder shall confer with the Department and ODFW to develop an action plan for subsequent years. If an area is not trending toward meeting the success criteria at Year 5 and has not been converted by the landowner to an inconsistent use, the certificate holder may propose remedial action and additional monitoring based on an evaluation of site capability. As an alternative, the certificate holder may conclude that revegetation of the area was unsuccessful and propose appropriate mitigation for the loss of habitat quality and quantity. The certificate holder shall implement the action plan, subject to the approval of the Department.

The certificate holder's qualified investigator shall evaluate whether a wildlife habitat area is trending toward meeting the success criteria by comparing the revegetation area to a reference area. In consultation with ODFW, the investigator shall choose reference sites near the revegetation area to represent the target conditions for the revegetation effort. The investigator shall select one or more reference sites that closely resemble the pre-disturbance characteristics of the revegetation area as indicated by site conditions, including vegetation density, relative proportion of desirable vegetation and species diversity of desirable vegetation. "Desirable vegetation" means those species included in the seed mix or native or native-like species, excluding noxious weeds. The investigator shall consider land use patterns, soil type, local terrain and noxious weed densities in selecting reference sites. It is likely that different reference sites will be needed to represent different pre-disturbance habitat conditions of the disturbed areas.

During the monitoring visits in Year 1, Year 3 and Year 5, the certificate holder's qualified investigator shall compare the revegetation area to the selected reference sites, unless some event (such as wildfire or tilling) has changed the vegetation conditions of a reference site so that it no longer represents the pre-disturbance conditions of the revegetation area. If such events have eliminated all suitable reference sites for a revegetation area, the investigator, in consultation with ODFW, shall select one or more new reference sites.

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1 Within each revegetation area, the investigator shall evaluate the progress of wildlife
2 habitat recovery in comparison to the reference sites. The investigator shall evaluate the
3 following site conditions (both within the revegetation area and within the reference sites):

- 4 • Degree of erosion due to disturbance activities (high, moderate or low).
- 5 • Vegetation density.
- 6 • Relative proportion of desirable vegetation as determined by the average number of
7 stems of desirable vegetation per square foot or by a visual scan of the area, noting
8 overall recovery status.
- 9 • Number of surviving juniper trees and overall vigor, height of tree and the extent of
10 branching.
- 11 • Species diversity of desirable vegetation.

12 The certificate holder shall report the investigator's findings and recommendations
13 regarding wildlife habitat recovery and revegetation success on an annual basis to the
14 Department (as part of the annual report on the facility) and to ODFW.

15 **3. Success Criteria**

16 In each monitoring report to the Department, the certificate holder shall provide an
17 assessment of revegetation success for all previously-disturbed wildlife habitat areas. A wildlife
18 habitat area is successfully revegetated when its habitat quality is equal to, or better than, the
19 habitat quality of the reference site as measured by the site conditions listed above. Juniper
20 planting will be considered successful when, in the investigator's judgment, one in five have
21 survived.

22 When the Department finds that the condition of a wildlife habitat area satisfies the
23 criteria for revegetation success, the Department shall conclude that the certificate holder has met
24 its restoration obligations for that area. If the Department finds that the landowner has converted
25 a wildlife habitat area to a use that is inconsistent with these success criteria, the Department
26 shall conclude that the certificate holder has no further obligation to restore the area for wildlife
27 habitat uses.

28 **4. Remedial Action**

29 After each monitoring visit, the certificate holder's qualified investigator shall report to
30 the certificate holder regarding the revegetation progress of each wildlife habitat area. The
31 investigator shall make recommendations to the certificate holder for reseeded or other remedial
32 measures for areas that are not showing progress toward achieving revegetation success. The
33 certificate holder shall take appropriate action to meet the objectives of this revegetation plan.
34 On an annual basis as part of the annual report on the facility, the certificate holder shall report to
35 the Department the investigator's recommendations and the remedial actions taken. The
36 Department may require reseeded or other remedial measures in those areas that do not meet the
37 success criteria.

38 If a wildlife habitat area is damaged by wildfire during the first five years following
39 initial seeding, the certificate holder shall work with the landowner to restore the damaged area.
40 The certificate holder shall continue to report on revegetation progress during the remainder of

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1 the five-year period. The certificate holder shall report the damage caused by wildfire and the
2 cause of the fire, if known.

3 VII. Amendment of the Plan

4 This Revegetation Plan may be amended from time to time by agreement of the
5 certificate holder and the Oregon Energy Facility Siting Council (“Council”). Such amendments
6 may be made without amendment of the site certificate. The Council authorizes the Department
7 to agree to amendments to this plan. The Department shall notify the Council of all amendments,
8 and the Council retains the authority to approve, reject or modify any amendment of this plan
9 agreed to by the Department.